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Full name of translator: Betty Wang

Signature of translator:

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Date

MAR. 15 2001

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Jen Tzu.
No. 043464 Lu, Rong-huei
Notary Public

MAR 15 2001

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Filing Date	SEPT. 29, 2000
Molex Ref.	A1-082 UM TW
Lien-Cheng Ref.	89P705

Title of Invention		ELECTRIC CABLE CONNECTOR
Inventor	Names	CHUN-HSIANG, CHIANG
	Nationality	No. 2, Lin 1, Liuku Tsun, Chinshan Hsiang, Taipei Hsien, Taiwan, R. O. C.
	Domicile	Taiwan, R. O. C.
Applicant	Name	MOLEX INCORPORATED
	Nationality	U. S. A.
	Domicile	2222 Wellington Court., Lisle, IL 60532-1682 U. S. A.
	Representative	Louis A. Hecht

Filing Date	
Filing No.	
Type	

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Inventor	Names	CHUN-HSIANG, CHIANG
	Domicile	No. 2, Lin 1, Liuku Tsun, Chinshan Hsiang, Taipei Hsien, Taiwan, R. O. C.
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041

ELECTRIC CABLE CONNECTOR

BACKGROUND OF THE INVENTION

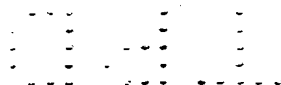
The present invention relates to an electric cable connector and, more particularly, to such an electric cable connector, which
5 comprises a rack fastened to the rear side of the connector body thereof and adapted to support the tail of each of the terminals and the wires of the electric cable, for enabling the wires of the electric cable to be easily soldered to the tail of each of the terminals.

A regular electric cable connector is generally comprised of
10 a rectangular, electrically insulative connector body. The connector body has a connection unit holding a plurality of terminals for receiving the matching electric cable connector. The terminals each have a tail extended out of the rear side of the connector body and suspending in the open air for soldering to respective wires of an
15 electric cable. Because the tail of each of the terminals is respectively suspending in the open air, it is difficult to solder the wires of the electric cable to the tail of each of the terminals, and one wire of the electric cable may be soldered to two or more terminals accidentally.

20 SUMMARY OF THE INVENTION

The present invention has been accomplished to provide an electric cable connector, which eliminates the aforesaid problems. It is the main object of the present invention to provide an electric

cable connector, which has support means to support the tail of each terminal, preventing the tail of each terminal from breaking due to suspension in the open air. It is another object of the present invention to provide an electric cable connector, which has support
5 means to support the tail of each of the terminals and the wires of the electric cable, keeping the wires of the cable arranged in good order for soldering to the tail of each of the terminals accurately rapidly. It is still another object of the present invention to provide an electric cable connector, which keeps the wires of the electric
10 cable isolated from one another to achieve better electric properties. To achieve these and other objects of the present invention, an electric cable connector is provided comprised of a connector body, a cable, and a rack. The connector body is inserted with terminals. The terminals each have a tail extended out of a rear side of the
15 connector body for electrically soldering to respective wires of the cable. The rack is fastened to the connector body, having a plurality of terminal bearing grooves adapted to receive the tail of each of the terminals preventing the tail of each terminal from suspension in the air, and a plurality of wire grooves adapted to receive the
20 wires of the cable for enabling the wires to be respectively positively soldered to the tail of each of the terminals. Positioning means is provided to connect the rack to the connector body. The rack can be made having multiple bearing blocks disposed at



different elevations to receive vertically spaced rows of terminals.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view of an electric cable connector according to a first embodiment of the present invention.

5 FIG. 2 is an assembly view of the electric cable connector according to the first embodiment of the present invention.

FIG. 3 is an oblique elevation of the rack for the electric cable connector according to the first embodiment of the present invention.

10 FIG. 4 is an exploded view of an electric cable connector according to a second embodiment of the present invention.

FIG. 5 is an assembly view of the electric cable connector according to the second embodiment of the present invention.

15 FIG. 6 is an oblique elevation of the rack for the electric cable connector according to the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1 and 2, an electric cable connector in accordance with the present invention is generally comprised of a
20 connector body 1, a cable 2, and a rack 3. The connector body 1 comprises an electrically insulative base 10, a plurality of terminals 11 respectively inserted into the base 10, and a metal shield (not shown) covering the base 10. The tail 110 of each of the

terminals 11 respectively extends out of the rear side of the base 10 for soldering to the cable 2. The cable 2 comprises an electrically insulative jacket 20, a plurality of wires 21 extended out of the jacket 20 and respectively soldered to the tail 110 of each of the
5 terminals 11.

The rack 3 (see FIG. 3) comprises a plurality of terminal grooves 30, a plurality of wire grooves 31, and a plurality of positioning rods 32. The terminal grooves 30 are adapted to receive the tail 110 of each of the terminals 11. Multiple ribs 33 are formed
10 integral with the rack 3 between each two adjacent terminal grooves 30. The ribs 33 are higher than the elevation of the tail 11 of each of the terminals 11 being rested in the terminal grooves 30, so that the ribs 3 prohibit soldering paste from splashing to the neighbor terminal grooves 30. The rear end of each of the terminal
15 grooves 30 is respectively connected to the wire grooves 31. The wire grooves 31 have a sector-like cross section over 180° for positive positioning of the wires 21 of the cable 2, for enabling the metal conductor 210 of each of the wires 21 to be respectively pressed on and soldered to the tail 110 of each of the terminals 11.
20 The positioning rods 32 of the rack 3 are respectively plugged into the respective locating holes 14 of the base 10 of the connector body 1, keeping the rack 3 positively secured to the connector body 1.

FIGS. 4 and 5 show an alternate form of the electric cable connector according to the present invention. According to this alternate form, the electric cable connector is comprised of a connector body 1, a cable 2, and a rack 3. The connector body 1 comprises an electrically insulative base 10, a plurality of terminals 11 respectively mounted in the base 10, and a metal shield 12 covering the base 10. The base 10 is molded from electrically insulative plastics or the like, comprising a front plug unit 13, and a plurality of terminal slots 130, which holds the terminals 11 respectively, keeping the tail 110 of each of the terminals 11 extended out of the rear side of the base 10 for soldering to the wires 21 of the cable 2.

The rack 3 (see also FIG. 6) is a stepped structure comprising two bearing blocks 34 and 35 disposed at different elevations. The upper bearing block 34 has a grooved topside. The lower block 35 has grooved top and bottom sides. Therefore, the rack 3 has three grooved faces. One common end of the bearing blocks 34 and 35 is provided with terminal slots 36 for receiving the terminals 11. Bearing grooves 30 are respectively provided at the bearing blocks 34 and 35 and extended to the terminal slots 36 for the positioning of the tail 110 of each of the terminals 11. The bearing blocks 34 and 35 may be separately made, and then fastened together. Alternatively, the bearing blocks 34 and 35 can

be formed integral with each other. The bearing grooves 30 have a substantially U-shaped cross section. Wire grooves 31 are respectively provided at the bearing blocks 34 and 35 in line with the bearing grooves 30 for receiving the metal conductor 210 of each of the wires 21 of the cable 2. Ribs 33 are provided at the bearing blocks 34 and 35 to separate the bearing grooves 30 from one another and to prohibit splashing of soldering paste from one terminal groove 30 to another.

As indicated above, the electric cable connector of the present invention achieves the following advantages:

- (1) The terminal bearing grooves support the tail of each of the terminals, preventing the tail of each of the terminals from breaking due to suspension in the open air.
- (2) The rack supports the tail of each of the terminals and the metal conductor of each of the wires of the cable for soldering accurately rapidly.
- (3) The terminal bearing grooves hold the wires of the cable in place, keeping the wires arranged in lines.
- (4) The terminal bearing grooves hold the terminals in place and isolate the terminals from one another, achieving better electric properties.

In conclusion, the present invention eliminates the terminal suspension and soldering problems of the prior art electric cable

connectors. The invention provides novelty, and achieves improvement. However, it is to be understood that the drawings are designed for purposes of illustration only, and are not intended for use as a definition of the limits and scope of the invention

5 disclosed.

What the invention claimed is:

1. An electric cable connector comprising:

a connector body, said connector body comprising a plurality of terminal slots, and a plurality of terminals respectively
5 mounted in said terminal slots, said terminals each having a tail extended out of a rear side of said connector body;

a cable, said cable comprising a plurality of wires respectively electrically soldered to the tail of each of said terminals; and

10 a rack fastened to said connector body and adapted to support the tail of each of said terminals and the wires of said cable, said rack comprising a plurality of terminal bearing grooves adapted to receive the tail of each of said terminals, and a plurality of wire grooves adapted to receive the wires of said cable for
15 enabling the wires of said cable to be respectively electrically soldered to the tail of each of said terminals.

2. The electric cable connector of claim 1 wherein said rack comprises a plurality of ribs respectively disposed between each two adjacent terminal bearing grooves of said rack above the
20 elevation of the tail of each of said terminals.

3. The electric cable connector of claim 1 wherein said wire grooves of said rack have a sector-like cross section over 180°.

4. The electric cable connector of claim 1 further comprising positioning means provided between said connector body and said rack.

5 5. The electric cable connector of claim 4 wherein said positioning means comprises a plurality of positioning rods respectively extended from said rack, and a plurality of locating holes respectively provided at said connector body and adapted to receive said positioning rods.

10 6. The electric cable connector of claim 1 wherein said rack comprises a plurality of bearing blocks, said bearing blocks comprising a plurality of terminal bearing grooves adapted to receive the tail of each of said terminals, a plurality of wire grooves adapted to receive the wires of said cable, and a plurality of terminal slots adapted to receive said terminals.

15 7. The electric cable connector of claim 6 wherein said bearing blocks are individual blocks that can be formed integral with one another.

8. The electric cable connector of claim 6 wherein the tail of each of said terminals in each of said terminal bearing grooves is
20 respectively disposed below the elevation of ribs being disposed between each two adjacent terminal bearing grooves of said bearing blocks.

9. The electric cable connector of claim 6 wherein said

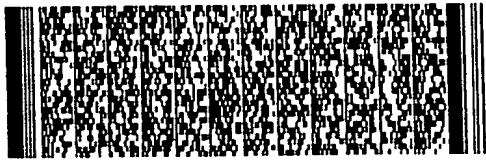
wire grooves of said bearing blocks have a sector-like cross section over 180°.

ABSTRACT OF THE DISCLOSURE

An electric cable connector includes a connector body, a cable, and a rack, the connector body being inserted with terminals, the terminals each having a tail extended out of a rear side of the connector body for electrically soldering to respective wires of the cable, the rack being fastened to the connector body, having a plurality of terminal bearing grooves adapted to receive the tail of each of the terminals preventing the tail of each terminal from suspension in the air, and a plurality of wire grooves adapted to receive the wires of the cable for enabling the wires to be respectively positively soldered to the tail of each of the terminals.

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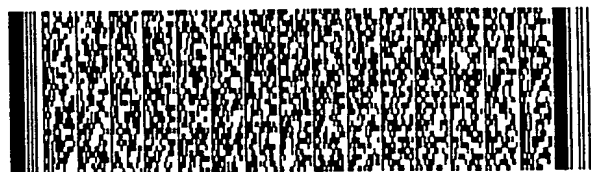
(以上各欄由本局填註)

新型專利說明書		
一、 新型名稱	中 文	線纜連接器構造
	英 文	
二、 創作人	姓 名 (中文)	1. 江圳祥
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	代表人 姓 名 (英文)	1.
		

四、中文創作摘要 (創作之名稱：線纜連接器構造)

一種線纜連接器構造，包括有一本體、一線纜及一支撐架體；該本體內插設有數個端子，則該等端子尾部可延伸出該本體後端，且該端子尾部係與該線纜銲接以達成電性連接，其中主要在於該本體後端連接該支撐架體，該支撐架體係設有數個端子支撐槽及數個導線固定槽，該等端子支撐槽係可提供該等端子尾部分別置放於上用，而使具有支撐作用以避免懸空狀態所造成的折損，另該導線固定槽可供該線纜之導線卡入固定，其具有理線及較佳電氣特性之功用，並俾以達到準確快速之銲接。

英文創作摘要 (創作之名稱：)



本案已向

國(地區)申請專利

申請日期

案號

主張優先權

無

五、創作說明 (1)

本創作係為一種線纜連接器構造，尤指一種利用支撐構件接合於連接器端子尾部，其可支撐該端子尾部以避免折損，且可固定連接線纜之導線，而使之較容易銲接及理線，並具有較好之電氣特性。

按，習知線纜連接器構造，大體上包括一略成長形之絕緣座體，該絕緣座體之一端設有一對接部，該對接部為收容有內具數個端子以用來與對接電子元件相導接，則其另一端則有伸出外部且懸空之該等端子尾部，而該等端子尾部係與一線纜末端之數個導線達成電性連接，該連接方式係將該等導線與該等端子尾部對準接觸，再進行錫焊的接合，然而在該等端子的尾部因無基座而懸空狀態下，直接進行銲接而造成一些缺點，如銲接時較不穩定，而容易使錫料太多、該導線太靠近，而不容易進行銲接，且該導線容易整個交錯在一起。

是以，由上可知，上述習知的線纜連接器構造，在實際使用上，顯然具有不便與缺失存在，而可待加以改善者。

緣是，本創作人有感上述缺失之可改善，乃特潛心研究並配合學理之運用，終於提出一種設計合理且有效改善上述缺失之本創作。

本創作之主要目的，係可提供該等端子尾部的支撐，以避免因懸空而產生折損的現象。

本創作之另一目的，在於可提供該等端子尾部及該等導線的固定，以便可準確且快速的銲接，同時具有理線的



五、創作說明 (2)

作用，而使之不易偏位。

本創作之又一目的，在於將線纜作部份的包覆而可得較佳之電氣特性。

為了達成上述目的，本創作提供一種線纜連接器構造，包括有一本體、一線纜及一支撐架體；其中該本體內插設有數個端子，則該等端子尾部可延伸出該本體後端，且該端子尾部係與該線纜銲接以達成電性連接，而主要於該本體後端連接該支撐架體，該支撐架體係設有數個端子支撐槽及數個導線固定槽，該等端子支撐槽係可提供該等端子尾部分別置放於上，而使之具有支撐作用以避免懸空狀態，且可使之準確快速的銲接，該等端子支撐槽之後端銜接有相通之該導線固定槽，該導線固定槽係為超過半圓弧之槽面，其可使該導線卡入該槽內而固定住，並具有理線及較佳電氣特性之功用，而該本體與該支撐架體之連接，其可設有一卡合構件作卡接，或利用該端子的尾部直接作卡合的動作，而該支撐架體為對應該等端子的接合，故該支撐架體設有數個承接座，其可供多層之該等端子的支撐用。

為了使貴審查委員能更進一步瞭解本創作之特徵及技術內容，請參閱以下有關本創作之詳細說明與附圖，然而所附圖式僅提供參考與說明用，並非用來對本創作加以限制者。

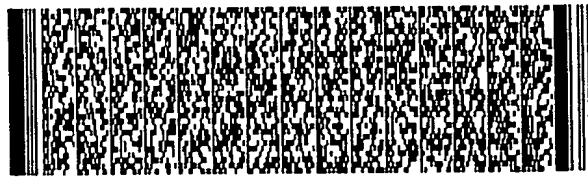
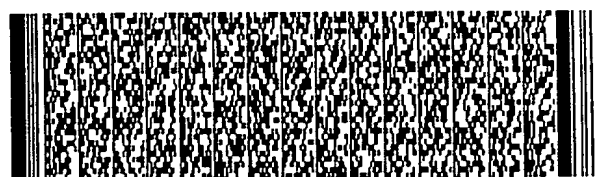
請同時參閱第一圖及第二圖所示，係分別為本創作線纜連接器構造立體分解圖及立體組合圖，其包括有一本體



五、創作說明 (3)

1、一線纜 2 及一支撐架體 3；該本體 1 係由一絕緣座體 10、數個插置於該絕緣座體 10 內部之端子 11 及一罩覆於該絕緣座體 10 之金屬遮蔽殼 (圖略) 所組合而成，且該等端子尾部 110 係伸出該絕緣座體 10 後端以便與該線纜 2 錫銲連接；該線纜 2 係於其外圍包覆有一絕緣套 20，並於其末端則設有數條延伸之導線 21，該等導線 21 係可分別與該等端子尾部 110 銲接為一體，而使之達成電性連接。

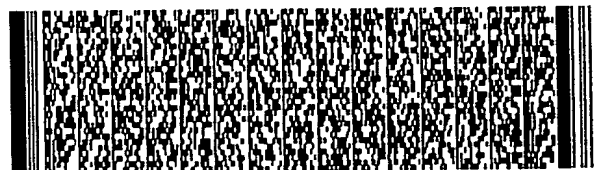
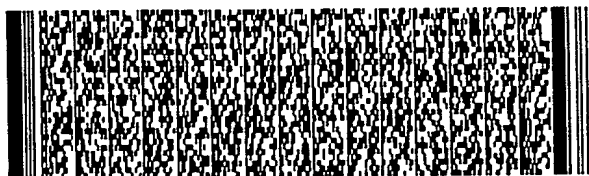
該支撐架體 3 (如第三圖所示) 係具有數個端子支撐槽 30、數個導線固定槽 31 及數個定位柱 32，該等端子支撐槽 30 係可提供該等端子尾部 110 分別對應置放於其上，且該等端子支撐槽 30 之相鄰間則形成有數個凸板 33，該等凸板 33 係略高於置放之該等端子尾部 110 的高度，且該高度差係具有隔離的作用，俾使銲接之焊料不易濺到相鄰之端子支撐槽 30，而該等端子支撐槽 30 之後端則銜接有相通之該等導線固定槽 31，該導線固定槽 31 係為超過半圓弧之槽面，俾以使該導線 21 扣入該導線固定槽 31 內而固定住，且該導線 21 設有一短距離外露之金屬線 210，該金屬線 210 則壓於該等端子尾部 110 上端以供銲接用，其可使之容易且準確的銲接，並具有整線的效果，該定位柱 32 為卡合構件，且該定位柱 32 係可嵌入該本體 1 之定位槽 14 內，而使得該支撐架體 3 穩定的與該本體 1 互相接合，該定位槽 14 可為原先即有或另外設置。



五、創作說明 (4)

請同時參閱第四圖及第五圖所示，係為本創作另有一實施例之線纜連接器構造立體分解圖及立體組合圖，其亦包括有一本體1、一線纜2及一支撐架體3，該本體1係由一絕緣座體10、數個插置於該絕緣座體10內部之端子11及一罩覆於該絕緣座體10之金屬遮蔽殼12所組成，而該絕緣座體10係以塑膠等絕緣材料所製成，其前端具有一插接部13，該插接部13內部設有數個延伸至後端之端子容置槽130，且該等端子容置槽130可用以收容該等端子11，而該等端子11之端子尾部110可伸出於該絕緣座體10後端，以便銲接於該線纜2之導線21用。

該支撐架體3（如第六圖所示）係設為階梯狀之二承接座34、35的組合，該上層之承接座34於正面具有槽面，而下層該承接座35則為正、背面皆具有槽面，俾使該支撐架體3係可呈三層之槽面，且該承接座34、35之一端設有可容該等端子11通過之數個容置孔36，且該等容置孔36延伸連接設有數個端子支撐槽30，藉由該等端子尾部110的插入該等容置孔36內以互相卡接，即可使之具有定位該支撐架體3，以及同時支撐該端子尾部110之功用，並且該支撐架體3係為配合該多層之該等端子尾部110，而設有數個承接座34、35的連接，該數個承接座34、35可為單一個承接座34、35的組合，亦可為一體成型，該等容置孔36則向後相通有U形狀之該等端子支撐槽30及數個略大於半圓弧槽



五、創作說明 (5)

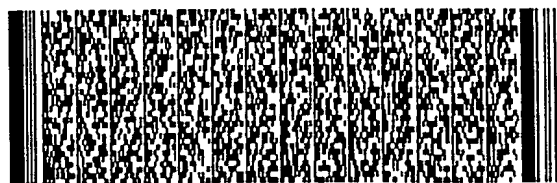
面之導線固定槽 31，而置放於該等端子支撐槽 30 之該等端子尾部係略低於該等端子支撐槽 30 相鄰間所形成之凸板 33，則該高度差係具有隔離之作用，俾使銲接之焊料不易濺到相鄰之端子支撐槽 30，而影響其銲接效果。

是以，透過本創作之線纜連接器構造，具有如下述之優點：

- (1)、該等端子支撐槽可作為該端子尾部固定支撐用，俾以避免該端子尾部因懸空所造成折損的現象。
- (2)、該支撐架體可提供置放該端子尾部及該線纜導線，其可使之不易偏位，以便容易、準確及快速的銲接。
- (3)、該端子支撐槽可固定扣住該導線，且可使導線排列整齊。
- (4)、且藉由該端子支撐槽隔離及包覆該等端子，俾使具有較好之電氣特性。

綜上所述，本創作實為改善習知線纜連接器之端子懸空且不易銲接等問題，其為不可多得之新型創作產品，極具新穎性及進步性，完全符合新型專利申請要件，爰依專利法提出申請，敬請詳查並賜准本案專利，以保障創作者之權益。

惟以上所述僅為本創作之較佳可行實施例，非因此即拘限本創作之專利範圍，故舉凡運用本創作說明書及圖式



五、創作說明 (6)

內容所為之等效結構變化，均同理皆包含於本創作之範圍內，合予陳明。



圖式簡單說明

第一圖為本創作第一實施例之線纜連接器之立體分解圖。
 第二圖為本創作第一實施例之線纜連接器之立體組合圖。
 第三圖為本創作第一實施例之支撐架體之立體圖。
 第四圖為本創作第二實施例之線纜連接器之立體分解圖。
 第五圖為本創作第二實施例之線纜連接器之立體組合圖。
 第六圖為本創作第二實施例之支撐架體之立體圖。

圖式中之參照號數

1	本體		
1 0	絕緣座體	1 1	端子
1 1 0	端子尾部		
1 2	金屬遮蔽殼	1 3	插接部
1 3 0	端子容置槽		
1 4	定位槽		
2	線纜		
2 0	絕緣套	2 1	導線
2 1 0	金屬線		
3	支撐架體		
3 0	端子支撐槽	3 1	導線固定槽
3 2	定位柱	3 3	凸板
3 4	承接座	3 5	承接座
3 6	容置孔		



六、申請專利範圍

1、一種線纜連接器構造，包括：

一本體，其內部設有數個端子容置槽，該等端子容置槽係用以收容數個端子，且該等端子尾部係伸出於該本體之後端；

一線纜，其末端設有數條導線，該等導線係與該等端子尾部以銲接達成電性連接；

一支撐架體，係具有數個端子支撐槽及數個導線固定槽，而該支撐架體係固定在該本體之後端，且該等端子支撐槽係對應放置該等端子尾部，該等導線固定槽係對應放置該等導線；

藉由上述構造，其可支撐該端子尾部及固定連接該導線，而使之較容易銲接及理線，並具有較好之電氣特性。

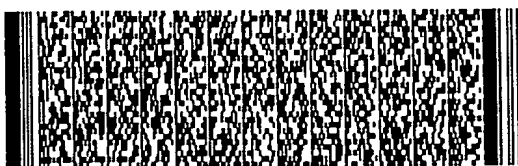
2、如申請專利範圍第1項所述之線纜連接器構造，其中該等端子支撐槽之相鄰間形成有數個凸板，該等凸板係略高於置放之該等端子尾部之高度。

3、如申請專利範圍第1項所述之線纜連接器構造，其中該導線固定槽係為超過半圓弧之槽面。

4、如申請專利範圍第1項所述之線纜連接器構造，其中該支撐架體與本體之間對應設有卡合構件。

5、如申請專利範圍第4項所述之線纜連接器構造，其中該卡合構件係為數個定位柱，且該本體後端設有數個定位槽，該等定位柱係可對應嵌入該等定位槽內。

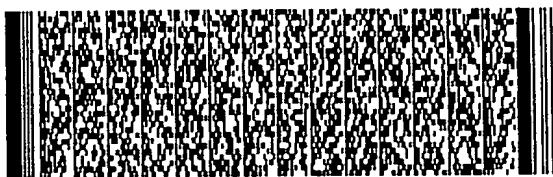
6、如申請專利範圍第1項所述之線纜連接器構造，其中



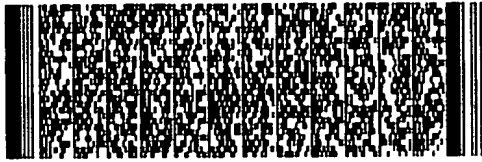
六、申請專利範圍

該支撐架體係設有數個承接座之連接，該等承接座具有數個端子支撐槽、數個導線固定槽及數個容置孔，該等端子支撐槽係對應放置該等端子尾部，該等導線固定槽係對應放置該等導線，且該等容置孔係由該等端子尾部的插入。

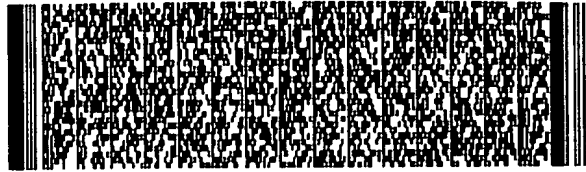
- 7、如申請專利範圍第6項所述之線纜連接器構造，其中該等承接座可為單一承接座的組合，亦可為一體成型。
- 8、如申請專利範圍第6項所述之線纜連接器構造，其中該等端子支撐槽內之該等端子尾部係略低於二該端子支撐槽相鄰間所形成之凸板。
- 9、如申請專利範圍第6項所述之線纜連接器構造，其中該導線固定槽係為超過半圓弧之槽面。



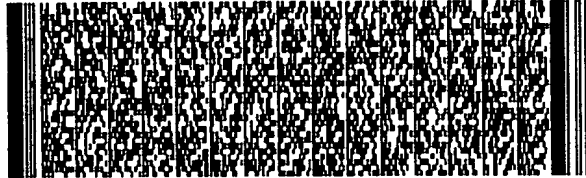
第 1/12 頁



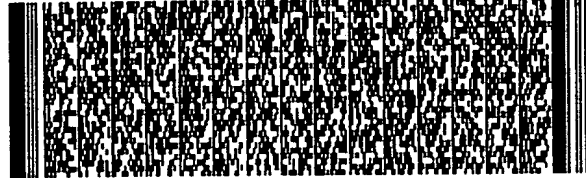
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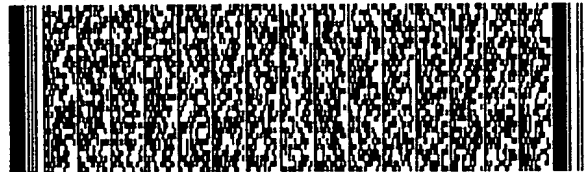
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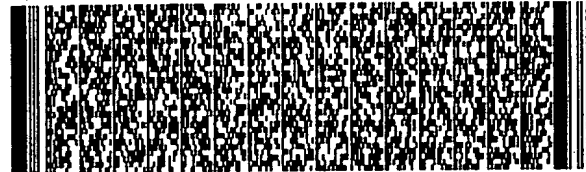
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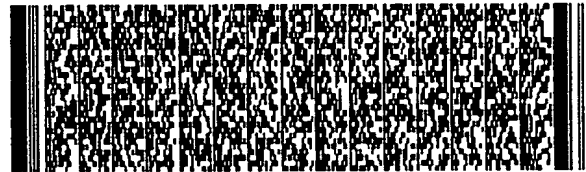
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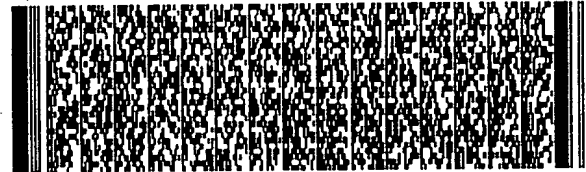
第 5/12 頁



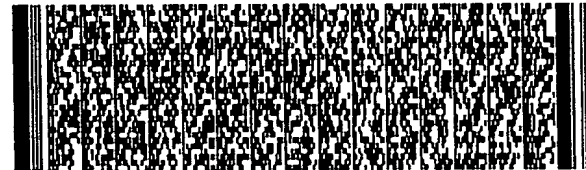
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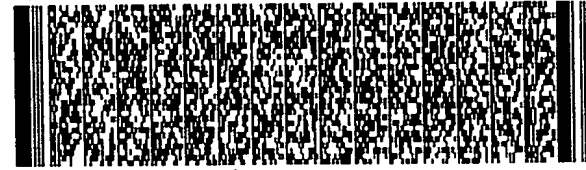
第 6/12 頁



第 7/12 頁



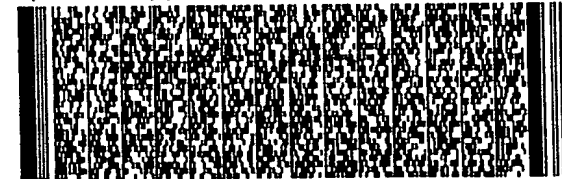
第 7/12 頁



第 8/12 頁



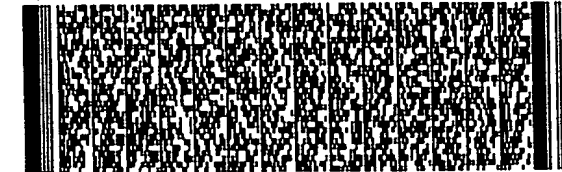
第 8/12 頁



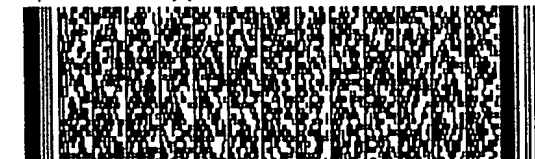
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第 10/12 頁

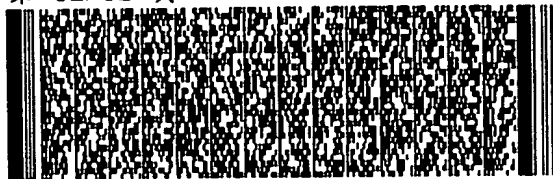


第 11/12 頁

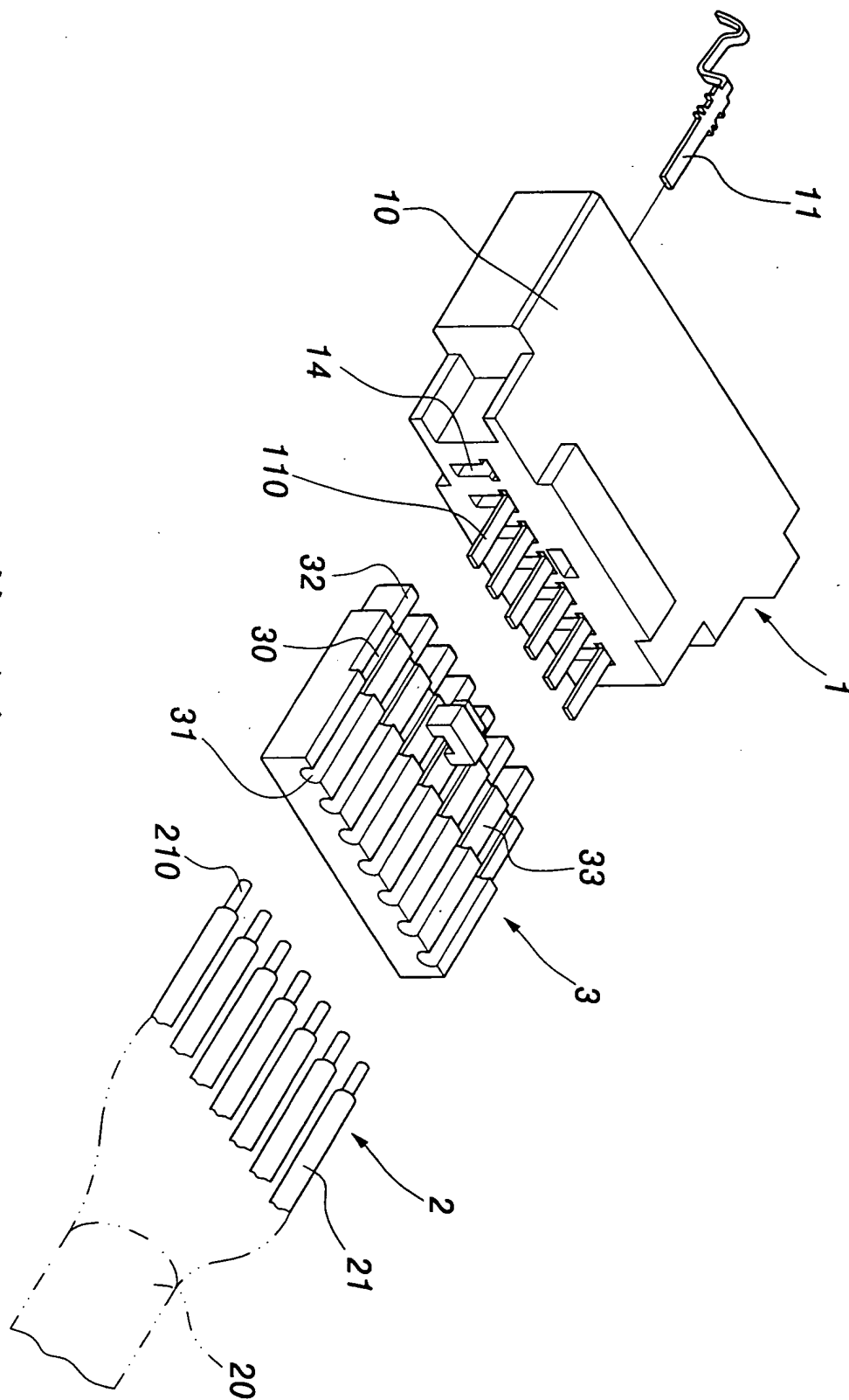


第 11/12 頁

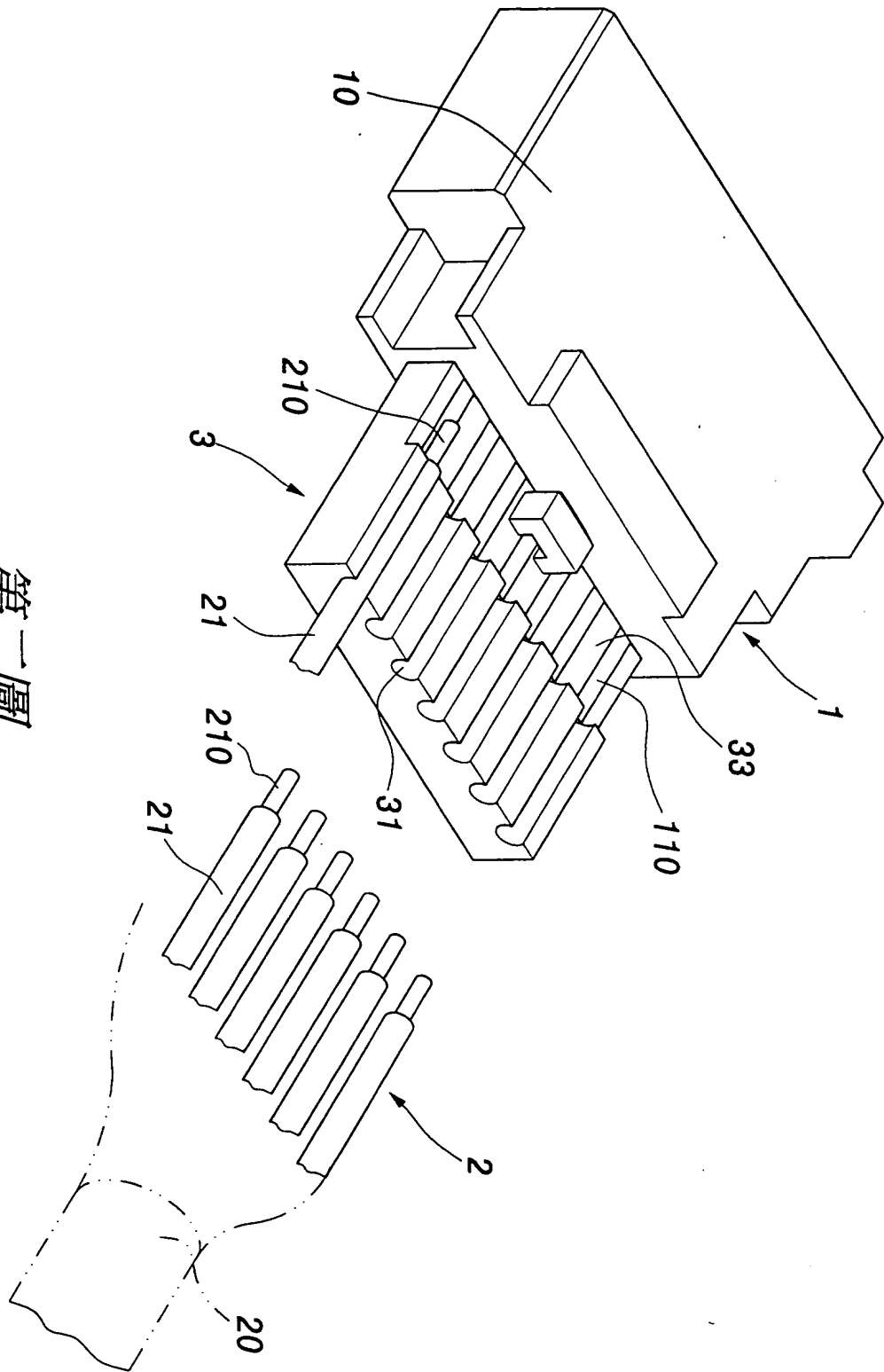




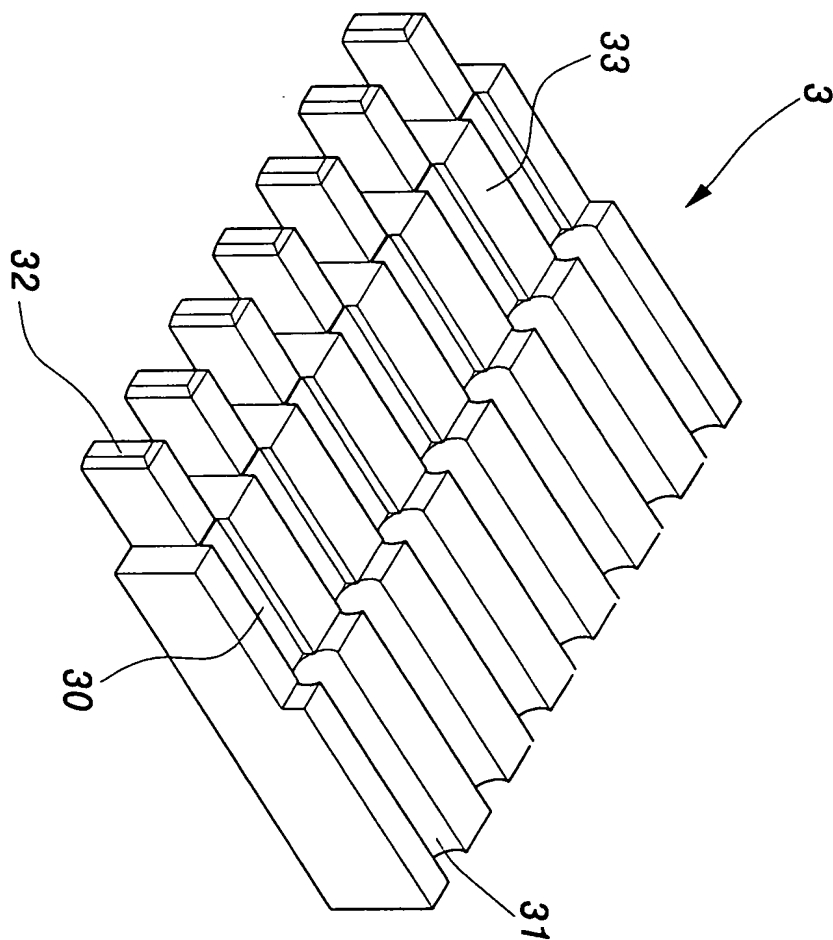
第一圖



圖式

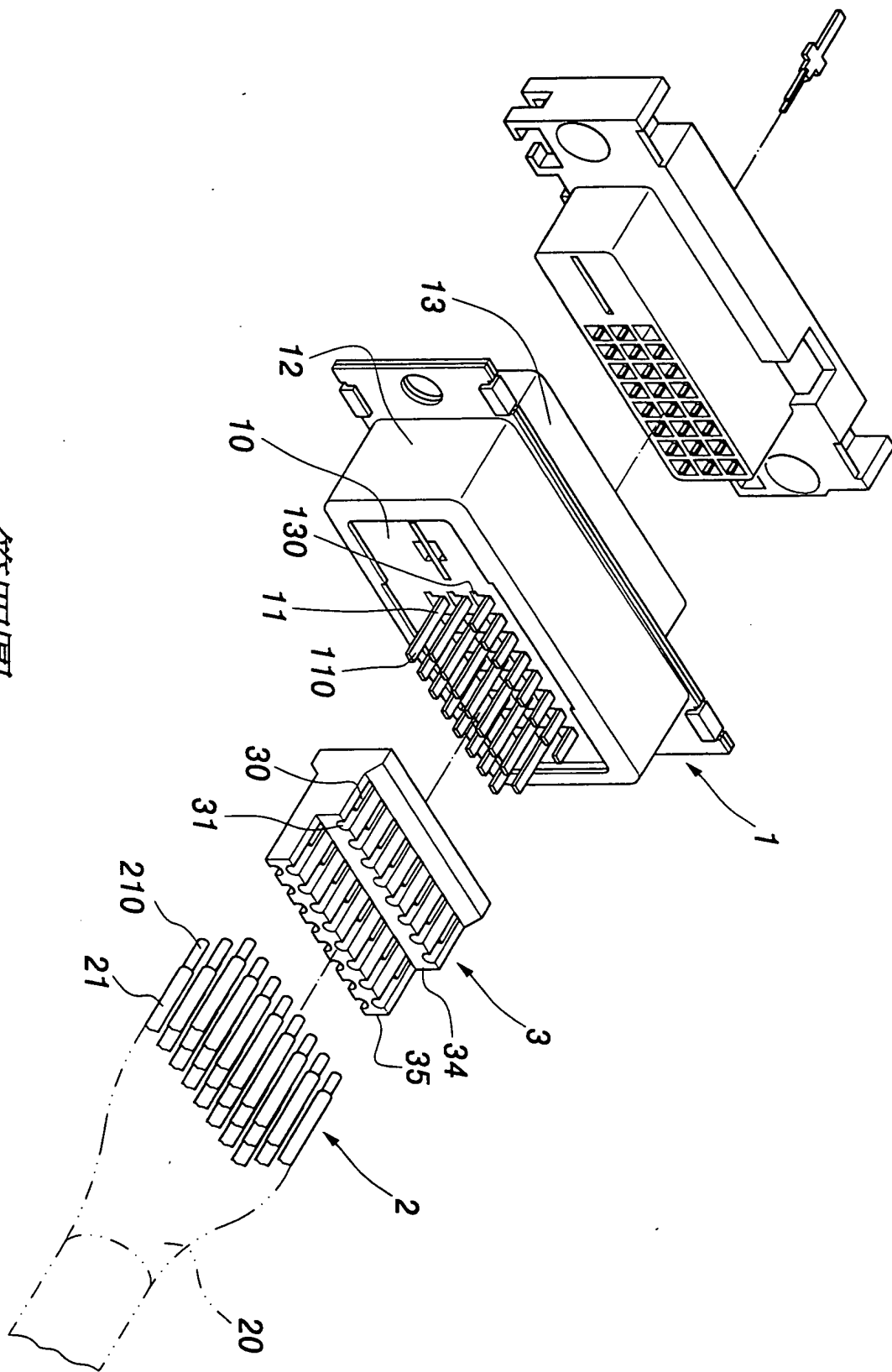


第二圖

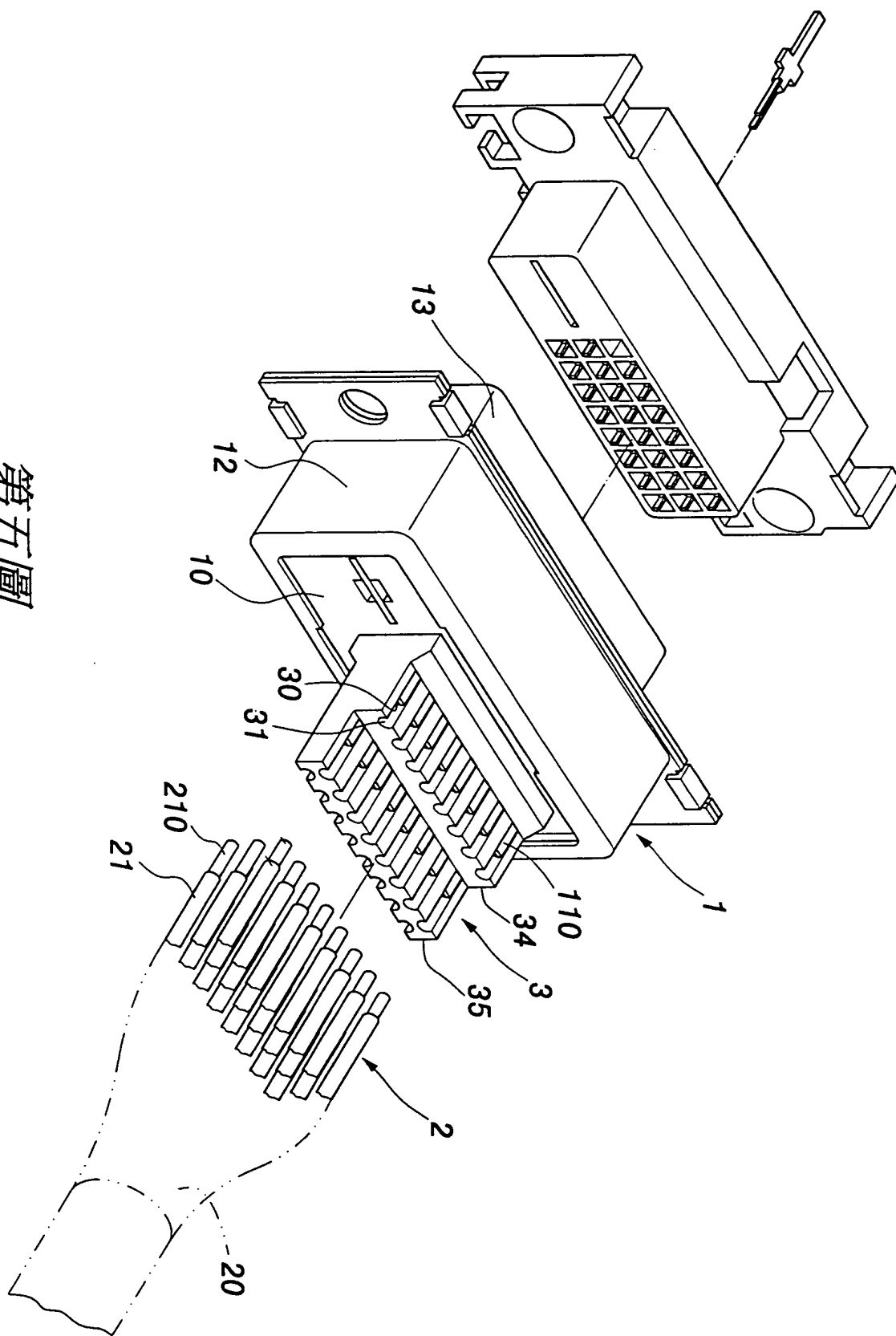


第三圖

第四圖



第五圖



第六圖

